

We Claim:

1. A communication network for rotating media channels between resources of an emergency services network and conforming emergency systems, the communication network comprising:

5 a conforming emergency system (CES) connected to a transport network; and

a plurality of resources of an emergency services network connected to the transport network,

wherein the CES and one of the resources dynamically establish a first media channel between one another over the transport network, and exchange messages over the first media channel to facilitate the CES in handling emergency events;

10 responsive to a triggering event, the CES and one of the resources dynamically establish a second media channel between one another over the transport network, and exchange messages over the second media channel to facilitate the CES in handling emergency events.

15 2. The communication network of claim 1 wherein the one resource for the first media channel and the one resource for the second media channel comprise the same resource.

3. The communication network of claim 1 wherein the one resource for the first media channel and the one resource for the second media channel comprise a different resource.

20 4. The communication network of claim 1 wherein:

at least one of the CES and the one resource for the first media channel tears down the first media channel after the second media channel is established.

5. The communication network of claim 1 wherein:

at least one of the CES and the one resource for the first media channel tears down the first media channel simultaneously as the second media channel is established.

5

6. The communication network of claim 1 wherein:

at least one of the CES and the one resource for the first media channel tears down the first media channel before the second media channel is established.

10

7. The communication network of claim 1 wherein:

at least one of the CES and the one resource for the first media channel tears down the first media channel after message sessions on the first media channel have ended.

8. The communication network of claim 1 wherein:

15

at least one of the CES and the one resource for the first media channel rolls message sessions on the first media channel to the second media channel before tearing down the first media channel.

9. The communication network of claim 1 wherein the triggering event comprises a time period elapsing.

20

10. The communication network of claim 1 wherein the triggering event comprises a request from the CES, the one resource for the first media channel, the one resource for the second media channel, or another system.

5 11. The communication network of claim 1 wherein the triggering event comprises the CES receiving a new emergency event.

12. The communication network of claim 1 wherein:

10 the CES transmits a first request message for the first media channel to the transport network;

the one resource for the first media channel receives the first request message, and responds to the first request message to dynamically establish the first media channel between the CES and the one resource for the first media channel;

15 responsive to the triggering event, the CES transmits a second request message for the second media channel to the transport network; and

the one resource for the second media channel receives the second request message, and responds to the second request message to dynamically establish the second media channel between the CES and the one resource for the second media channel.

13. The communication network of claim 12 wherein:

the one resource for the first media channel responds to the first request message by transmitting a response message indicating an acceptance of the first media channel to the transport network; and

5 the CES receives the response message over the transport network and initiates a process to dynamically establish the first media channel.

14. The communication network of claim 12 wherein:

10 the one resource for the first media channel responds to the first request message by initiating a process to dynamically establish the first media channel.

15. The communication network of claim 12 further comprising:

15 a channel setup system connected to the transport network, the channel setup system receives the first request message from the CES, selects the one resource for the first media channel, and transmits the first request message to the one resource for the first media channel.

16. The communication network of claim 15 wherein:

the channel setup system selects the one resource for the first media channel by identifying the availability of each of the resources in the emergency services network.

20

17. The communication network of claim 15 wherein:

the channel setup system includes a data structure that stores information on the plurality of resources, the channel setup system accesses the information in the data structure to select the one resource for the first media channel.

5

18. The communication network of claim 17 wherein the information in the data structure includes at least one of a capacity or current load of each of the plurality of resources, an operational status of each of the plurality of resources, a number of media channels established with each of the plurality of resources, security, a location of each resource, data connectivity speed of each resource, the type of protocol used by each resource, and the type of each resource.

10

19. The communication network of claim 15 wherein the channel setup system comprises a Session Initiation Protocol (SIP) proxy or a SIP server.

15

20. The communication network of claim 15 wherein:

the one resource for the first media channel responds to the first request message by transmitting a response message indicating an acceptance of the first media channel to the channel setup system; and

the channel setup system transmits the response message to the CES.

20

21. The communication network of claim 15 wherein:

the one resource for the first media channel responds to the first request message by transmitting a response message indicating an acceptance of the first media channel to the CES.

22. The communication network of claim 1 wherein:

the one resource for the first media channel transmits a first request message for the first media channel to the transport network;

5 the CES receives the first request message, and responds to the first request message to dynamically establish the first media channel between the CES and the one resource for the first media channel;

responsive to the triggering event, the one resource for the second media channel transmits a second request message for the second media channel to the transport network; and

10 the CES receives the second request message, and responds to the second request message to dynamically establish the second media channel between the CES and the one resource for the second media channel.

23. The communication network of claim 22 wherein:

15 the CES responds to the first request message by transmitting a response message indicating an acceptance of the first media channel to the transport network; and

the one resource for the first media channel receives the response message over the transport network and initiates a process to dynamically establish the first media channel.

20 24. The communication network of claim 22 wherein:

the CES responds to the first request message by initiating a process to dynamically establish the first media channel.

25. The communication network of claim 22 further comprising:

a channel setup system connected to the transport network, the channel setup system receives the first request message from the one resource for the first media channel, and transmits the first request message to the CES.

5

26. The communication network of claim 25 wherein the channel setup system comprises a Session Initiation Protocol (SIP) proxy or a SIP server.

27. The communication network of claim 25 wherein:

10

the CES responds to the first request message by transmitting a response message indicating an acceptance of the first media channel to the channel setup system; and

the channel setup system transmits the response message to the one resource for the first media channel.

15

28. The communication network of claim 25 wherein:

the CES responds to the first request message by transmitting a response message indicating an acceptance of the first media channel to the one resource for the first media channel.

20

29. The communication network of claim 1 wherein the CES and the one resource for the first media channel use Session Initiation Protocol (SIP) to dynamically establish the first media channel.

30. The communication network of claim 1 wherein the plurality of resources includes a response gateway.

31. The communication network of claim 1 wherein the plurality of resources includes at least one of an ALI database, a Mobile Positioning Center (MPC), a Gateway Mobile Location Center (GMLC), an Emergency Auxiliary Service Provider (EASP), and a Voice over Internet Protocol (VoIP) server.

32. The communication network of claim 1 wherein the emergency events include 9-1-1 calls.

33. The communication network of claim 1 wherein the CES exchanges at least one of streaming video, streaming audio, graphics data, voice, text or binary data, and executable instructions or scripts over the first media channel.

34. The communication network of claim 1 wherein the CES comprises a computer system for a Public Safety Answering Point (PSAP).

35. The communication network of claim 1 wherein the CES comprises a computer system for one of a hospital, a police department, a fire station, a fire alarm company, a security company, an ambulance service, a state 9-1-1 coordinator, the Federal Emergency Management Agency (FEMA), the Department of Homeland Security, the National Geophysical Data Center, or the Center for Disease Control (CDC).



36. A method of operating a communication network for rotating media channels between a plurality of resources of an emergency services network and a conforming emergency system (CES), the method comprising the steps of:

dynamically establishing a first media channel between the CES and one of the resources,  
5 and exchanging messages between the CES and the one resource over the first media channel to facilitate the CES in handling emergency events; and

responsive to a triggering event, dynamically establishing a second media channel between the CES and one of the resources, and exchanging messages between the CES and the one resource over the second media channel to facilitate the CES in handling emergency events.

10 37. The method of claim 36 wherein the one resource for the first media channel and the one resource for the second media channel comprise the same resource.

38. The method of claim 36 wherein the one resource for the first media channel and the one  
15 resource for the second media channel comprise a different resource.

39. The method of claim 36 further comprising the step of:

tearing down the first media channel after the second media channel is established.

20 40. The method of claim 36 further comprising the step of:

tearing down the first media channel simultaneously as the second media channel is established.

41. The method of claim 36 further comprising the step of:

tearing down the first media channel before the second media channel is established.

42. The method of claim 36 further comprising the step of:

tearing down the first media channel after message sessions on the first media channel have ended.

43. The method of claim 36 further comprising the step of:

rolling message sessions on the first media channel to the second media channel before tearing down the first media channel.

44. The method of claim 36 wherein the triggering event comprises a time period elapsing.

45. The method of claim 36 wherein the triggering event comprises a request from the CES, the one resource for the first media channel, the one resource for the second media channel, or another system.

46. The method of claim 36 wherein the triggering event comprises the CES receiving a new emergency event.

47. The method of claim 36 wherein:

the step of dynamically establishing the first media channel comprises transmitting a first request message for the first media channel from the CES to the transport network, receiving the first request message in the one resource for the first media channel, and responding to the first request message to dynamically establish the first media channel between the CES and the one resource for the first media channel; and

the step of dynamically establishing the second media channel comprises transmitting a second request message for the second media channel from the CES to the transport network, receiving the second request message in the one resource for the second media channel, and responding to the second request message to dynamically establish the second media channel between the CES and the one resource for the second media channel.

48. The method of claim 47 wherein the step of responding to the first request message comprises transmitting a response message indicating an acceptance of the first media channel from the one resource for the first media channel to the transport network, the method further comprising the steps of:

receiving the response message in the CES over the transport network, and initiating a process to dynamically establish the first media channel between the CES and the one resource for the first media channel.

49. The method of claim 47 wherein the step of responding to the first request message comprises initiating a process in the one resource for the first media channel to dynamically establish the first media channel.

50. The method of claim 47 wherein the communication network further comprises a channel setup system connected to the transport network, the method further comprising the steps of:

receiving the first request message in the channel setup system from the CES, selecting  
5 the one resource for the first media channel, and transmitting the first request message to the one resource for the first media channel.

51. The method of claim 50 wherein the step of selecting the one resource for the first media channel in the channel setup system comprises:

10 selecting the one resource for the first media channel by identifying the availability of each of the plurality of resources in the emergency services network.

52. The method of claim 50 wherein the channel setup system includes a data structure that stores information on the plurality of resources, and the step of selecting the one resource for the  
15 first media channel in the channel setup system comprises:

accessing the information in the data structure to select the one resource for the first media channel.

53. The method of claim 52 wherein the information in the data structure includes at least one of  
20 a capacity or current load of each of the plurality of resources, an operational status of each of the plurality of resources, a number of media channels established with each of the plurality of resources, security, a location of each resource, data connectivity speed of each resource, the type of protocol used by each resource, and the type of each resource.

54. The method of claim 50 wherein the channel setup system comprises a Session Initiation Protocol (SIP) proxy or a SIP server.

5      55. The method of claim 50 wherein the step of responding to the first request message comprises transmitting a response message indicating an acceptance of the first media channel to the channel setup system, the method further comprising the step of:

transmitting the response message from the channel setup system to the CES.

10      56. The method of claim 50 wherein the step of responding to the first request message comprises transmitting a response message indicating an acceptance of the first media channel to the CES.

57. The method of claim 36 wherein:

the step of dynamically establishing the first media channel comprises transmitting a first request message for the first media channel from the one resource for the first media channel to the transport network, receiving the first request message in the CES, and responding to the first request message to dynamically establish the first media channel between the CES and the one resource for the first media channel; and

the step of dynamically establishing the second media channel comprises transmitting a second request message for the second media channel from the one resource for the second media channel to the transport network, receiving the second request message in the CES, and responding to the second request message to dynamically establish the second media channel between the CES and the one resource for the second media channel.

58. The method of claim 57 wherein the step of responding to the first request message comprises transmitting a response message indicating an acceptance of the first media channel from the CES to the transport network, the method further comprising the steps of:

receiving the response message in the one resource for the first media channel over the transport network, and initiating a process to dynamically establish the first media channel between the CES and the one resource for the first media channel.

59. The method of claim 57 wherein the step of responding to the first request message comprises initiating a process in the CES to dynamically establish the first media channel.

60. The method of claim 57 wherein the communication network further comprises a channel setup system connected to the transport network, the method further comprising the steps of:

receiving the first request message in the channel setup system from the one resource for the first media channel, and transmitting the first request message to the CES.

5

61. The method of claim 60 wherein the channel setup system comprises a Session Initiation Protocol (SIP) proxy or a SIP server.

62. The method of claim 60 wherein the step of responding to the first request message comprises transmitting a response message indicating an acceptance of the first media channel to the channel setup system, the method further comprising the step of:

10

transmitting the response message from the channel setup system to the one resource for the first media channel.

63. The method of claim 60 wherein the step of responding to the first request message comprises transmitting a response message indicating an acceptance of the first media channel to the one resource for the first media channel.

15

64. The method of claim 36 further comprising the step of:

using Session Initiation Protocol (SIP) to dynamically establish the first media channel.

20

65. The method of claim 36 wherein the plurality of resources includes a response gateway.

66. The method of claim 36 wherein the plurality of resources includes at least one of an ALI database, a Mobile Positioning Center (MPC), a Gateway Mobile Location Center (GMLC), an Emergency Auxiliary Service Provider (EASP), and a Voice over Internet Protocol (VoIP) server.

5

67. The method of claim 36 wherein the emergency events include 9-1-1 calls.

68. The method of claim 36 wherein the CES exchanges one of streaming video, streaming audio, graphics data, voice, text or binary data, or executable instructions or scripts over the first media channel.

10

69. The method of claim 36 wherein the CES comprises a computer system for a Public Safety Answering Point (PSAP).

15

70. The method of claim 36 wherein the CES comprises a computer system for one of a hospital, a police department, a fire station, a fire alarm company, a security company, an ambulance service, a state 9-1-1 coordinator, the Federal Emergency Management Agency (FEMA), the Department of Homeland Security, the National Geophysical Data Center, or the Center for Disease Control (CDC).

20



71. A conforming emergency system (CES) that rotates media channels with resources of an emergency services network, the CES comprising:

a channel system that dynamically establishes a first media channel with one of the resources of the emergency services network; and

5 a message system, responsive to the first media channel being established, that exchanges messages over the first media channel with the one resource for the first media channel to facilitate the CES in handling emergency events;

the channel system, responsive to a triggering event, dynamically establishes a second media channel with one of the resources of the emergency services network;

10 the message system, responsive to the second media channel being established, exchanges messages over the second media channel with the one resource for the second media channel to facilitate the CES in handling emergency events.

72. The CES of claim 71 wherein the channel system dynamically establishes the first media  
15 channel by transmitting a first request message for a first media channel to a transport network, and initiating a process to dynamically establish the first media channel between the CES and the one resource for the first media channel responsive to receiving a first response message from the one resource for the first media channel over the transport network.

20 73. The CES of claim 71 wherein:

the channel system tears down the first media channel after the second media channel is established.

74. The CES of claim 71 wherein:

the channel system tears down the first media channel simultaneously as the second media channel is established.

5 75. The CES of claim 71 wherein:

the channel system tears down the first media channel before the second media channel is established.

76. The CES of claim 71 wherein:

10 the channel system tears down the first media channel after message sessions by the message system on the first media channel have ended.

77. The CES of claim 71 wherein:

15 the message system rolls message sessions on the first media channel to the second media channel before tearing down the first media channel.

78. The CES of claim 71 wherein the triggering event comprises a time period elapsing.

79. The CES of claim 71 wherein the triggering event comprises a request from the channel system, the one resource for the first media channel, the one resource for the second media channel, or another system.

20

80. The CES of claim 71 wherein the triggering event comprises the CES receiving a new emergency event.

81. The CES of claim 71 wherein:

5           the channel system negotiates parameters of the first media channel before the first media channel is established.

82. The CES of claim 71 wherein the channel system uses Session Initiation Protocol (SIP) to dynamically establish the first media channel.

10

83. The CES of claim 82 wherein the channel system comprises a SIP user agent.

84. The CES of claim 71 wherein the CES comprises a computer system for one of a Public Safety Answering Point (PSAP), a hospital, a police department, a fire station, a fire alarm  
15       company, a security company, an ambulance service, a state 9-1-1 coordinator, the Federal Emergency Management Agency (FEMA), the Department of Homeland Security, the National Geophysical Data Center, or the Center for Disease Control (CDC).

85. A method of operating a conforming emergency system (CES) for rotating media channels with resources of an emergency services network, the method comprising the steps of:

dynamically establishing a first media channel with one of the resources of the emergency services network;

5 exchanging messages over the first media channel with the one resource for the first media channel to facilitate the CES in handling emergency events;

responsive to a triggering event, dynamically establishing a second media channel with one of the resources of the emergency services network; and

10 exchanging messages over the second media channel with the one resource for the second media channel to facilitate the CES in handling emergency events.

86. The method of claim 85 wherein the step of dynamically establishing the first media channel comprises:

transmitting a first request message for a first media channel to a transport network;

15 receiving a first response message from the one resource for the first media channel over the transport network; and

initiating a process to dynamically establish the first media channel between the CES and the one resource for the first media channel.

20 87. The method of claim 85 further comprising the step of:

tearing down the first media channel after the second media channel is established.

88. The method of claim 85 further comprising the step of:

tearing down the first media channel simultaneously as the second media channel is established.

5 89. The method of claim 85 further comprising the step of:

tearing down the first media channel before the second media channel is established.

90. The method of claim 85 further comprising the step of:

10 tearing down the first media channel after message sessions on the first media channel have ended.

91. The method of claim 85 further comprising the step of:

15 rolling message transfers on the first media channel to the second media channel before tearing down the first media channel.

92. The method of claim 85 wherein the triggering event comprises a time period elapsing.

93. The method of claim 85 wherein the triggering event comprises a request from the CES, the one resource for the first media channel, the one resource for the second media channel, or  
20 another system.

94. The method of claim 85 wherein the triggering event comprises the CES receiving a new emergency event.

95. The method of claim 85 further comprising the step of:

negotiating parameters of the first media channel before the first media channel is established.

5

96. The method of claim 85 wherein the step of dynamically establishing the first media channel comprises:

dynamically establishing the first media channel using Session Initiation Protocol (SIP).

10

97. The method of claim 85 wherein the CES comprises a computer system for one of a Public Safety Answering Point (PSAP), a hospital, a police department, a fire station, a fire alarm company, a security company, an ambulance service, a state 9-1-1 coordinator, the Federal Emergency Management Agency (FEMA), the Department of Homeland Security, the National Geophysical Data Center, or the Center for Disease Control (CDC).

15